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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/867,892      | 05/30/2001  | Rob Anne Beuker      | TW 000002           | 7104             |

24737 7590 12/28/2005

PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
P.O. BOX 3001  
BRIARCLIFF MANOR, NY 10510

EXAMINER

EDWARDS, PATRICK L

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2621

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/867,892

Applicant(s)

BEUKER ET AL.

Examiner

Patrick L. Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 13 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-5 and 13 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

#### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-11-2005 has been entered.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schultz et al ("Multiframe Integration via the projective transformation with automated block matching feature point selection") in view of Jasinski et al (USPN 6,504,569), and further in view of Nettles (USPN 5,430,806).

Regarding claim 1, Schultz discloses selecting four feature points in the 3D scene within an overlapping region of the pair of 2D images (Schultz, pg. 3266 left column: The reference describes selecting four feature points. These four feature points are selected from an overlapping region of a pair of 2D images (see abstract and introduction, generally)).

Schultz further discloses finding 2D coordinates (with respect to the original coordinate system of the two images) of the points in both images corresponding to the selected feature points (Schultz pg. 3266 left column, final paragraph: The reference describes the variables,  $x_k$  and  $x'_k$ . These variables are analogous to the coordinates of the feature points in both images.).

Schultz further discloses determining parameters of a projective transformation for application in original (non-translated) coordinate systems of the two images (Schultz pg. 3266 left column final paragraph) and merging the two images into a composite image by transforming one image according to the projective transformation into a transformed image and combining the transformed image with the other image (Schultz pg. 3266 right column step 7).

Schultz fails to expressly disclose the intermediate step of performing a translation of the 2D coordinates found in the original coordinate system of the two images to substantially minimize average coordinate ranges of the found 2D coordinates before determining the parameters of a substantially optimal projective transformation.

Jasinski, however, teaches translating the original coordinate system of selected 2D feature points such that the average coordinate ranges of the feature points is substantially minimized (Jasinski col. 6 lines 62-67). The

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step of coordinate calibration disclosed in the Jasinski reference is analogous to the translation of the original coordinate system recited in the claim in that the average coordinate ranges are substantially minimized (i.e. the spatial center of mass of the feature points is approximately at the (0,0) coordinate origin).

It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Schultz's image merging method by translating the coordinate system of the matched feature points before determining a projective transformation as taught by Jasinski. Such a modification would have allowed for a more stable determination of the projective transformation (Jasinski col. 6 line 67 – col. 7 line 1).

The Jasinski reference fails to expressly disclose the step of altering the projective transformation parameters in the translated coordinate systems using translation vectors that ensure an equivalence of the projective transformation in the original and translated coordinate systems is true. This step implies that the projective transformation (which is computed using the translated coordinate system) is applied in the original, untranslated coordinate system (see applicant's specification paragraph [0059]). The Jasinski reference, therefore, is deficient with respect to this limitation in that it discloses the translation of an original coordinate system before performing a transformation, but fails to expressly disclose that this transformation is applied in the original coordinate system.

Nettles, however, discloses translating an original coordinate system prior to performing a transformation and then translating the coordinate system back to its original state so that the transformation can be applied in the original non-translated coordinate system (Nettles col. 3 lines 21-37), and therefore meets all the additional limitations of claim 1. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Jasinski's image processing method by translating the transformed image back into the original coordinate system as taught by Jasinski. Such a modification would have allowed for viewing of the transformed image (Nettles col. 8 lines 14-21).

With regard to claim 2, Schultz further discloses automatic selection of feature points with sufficient surrounding structure for accurate matching of the corresponding 2D coordinates in the two images (Schultz pg 3266 left column final paragraph).

With regard to claim 3, Jasinski further discloses that translating comprises determining the translation for each image as the average of the 2D coordinates in that image (Jasinski col. 6 lines 62-67). Putting the coordinate origin at the spatial center of mass of the feature points as disclosed in Jasinski is analogous to taking an average of the 2D coordinates as recited in the claim.

With regard to claim 5, Schultz discloses calculating a least squares solution for the projective transformation. A least squares solution as disclosed in Schultz qualifies as a function for minimizing error as recited in the claim.

Regarding claim 13, a computer readable medium comprising instructions for computer execution is inherent in the combination of Schultz, Jasinski, and Nettles.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Schultz, Jasinski and Nettles as applied to claim 1 above, and further in view of well known prior art.

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With regard to claim 4, Schultz discloses determining the projective transformation parameters through the use of a matrix operation. Claim 4 recites determining these parameters by performing a singular value decomposition. Singular value decomposition is well known in the art (Official Notice) as a method for solving a matrix. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Schultz's transformation parameter determination by specifying that the matrix operation was solved by a method of singular value decomposition. Such a modification would have allowed for a well known method of solving a matrix.

*Conclusion*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (571) 272-7390. The examiner can normally be reached on 8:30am - 5:00pm M-F.

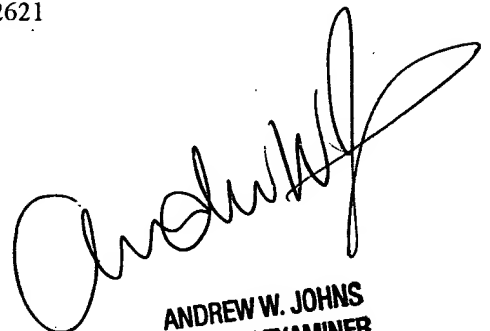
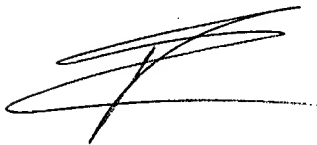
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick L Edwards

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ANDREW W. JOHNS  
PRIMARY EXAMINER